



NAVAL RESEARCH LABORATORY

TECHNOLOGY LICENSING OPPORTUNITY

SPUTTERED THIN FILM PHOTOVOLTAICS

Advantages/Features

Well-established fabrication method (sputtering) that produces uniform, large-area coatings

Allows for targets and films with a large range of compositions, even non-stoichiometric

High material utilization

Eliminates need for processing with highly toxic chemicals (H_2Se gas, potassium cyanide)

Applications

High-efficiency thin film photovoltaics

Flexible photovoltaics

For more information contact:

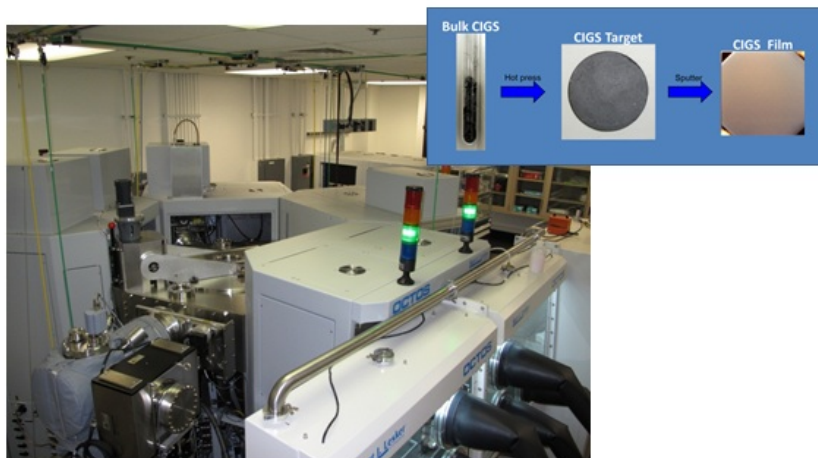
Rita Manak, Ph.D.
Head, Technology Transfer Office

202 767-3083

rita.manak@nrl.navy.mil

Identification Number:

ENE06



The Naval Research Laboratory (NRL) has developed a suite of processes for the fabrication of bulk and sputtered thin film copper indium gallium diselenide (CIGS) and related materials for photovoltaic (PV) applications. These processes result in films with better uniformity over large areas than existing techniques such as evaporation. The technology developed at NRL permits the fabrication of high purity bulk samples with a large range of compositions which are then converted into targets that can be sputtered to make films with optimum properties for PV applications, ultimately resulting in a more efficient solar cell. These NRL technologies permit optimized PV films to be deposited in a single deposition step with a high degree of uniformity and control over film composition.

References

"Cu(In,Ga)Se₂ Thin Films and Devices Sputtered from a Single Target Without Additional Selenization," *Thin Solid Films* **519** (2011) 7763-7765.

"Characterization of Cu(In,Ga)Se₂ Thin Films and Devices Sputtered from a Single Target Without Additional Selenization," *37th IEEE PVSC* (2011).

Available for License: US Patent Pub. Nos. 2011-0067757 and 2011-0067997. Other related applications have been filed.



technology